Claims

1. A laser source for generating a stable laser beam of a given bandwidth, including a laser (1) and guide means (5) for conducting the laser beam exiting said front facet, characterized by
   - a plurality of external cavities (5a, 5b; 15a, 15b; 25a, 25b; 33) at least partly within or as part of said laser beam guide means (5), each of said cavities being established by at least two reflectors (2 and 6a, 6a and 6b; 2 and 16a, 16a and 16b; 2 and 26a, 26a and 26b; 2 and 31, 31 and 34),
   - said plurality of external cavities being dimensioned and arranged such that said laser (1) operates essentially in a coherence collapse mode.

2. The laser source according to claim 1, wherein
   - all cavities (5a, 5b; 15a, 15b) are situated within the laser beam guide means (5), preferably in front of the laser (1).

3. The laser source according to claim 1, wherein
   - one or more cavities (5a, 5b) are arranged within the laser beam guide means (5) in front of the laser (1), and
   - at least one cavity (25a, 25b) is arranged at the rear of the laser (1).

4. The laser source according to claim 1 or 3, including in combination
   - a "serial" cavity (15a) arranged within the laser beam guide means (5),
   - a "lateral" cavity (33) arranged outside said laser beam guide means (5), and
   - a beam splitter/combiner (31) deflecting a portion of the beam into said lateral cavity.

5. The laser source according to one or more of the preceding claims, wherein

- two reflectors, in particular Bragg gratings, are provided, whose peak wavelengths are offset and/or bandwidths are different.

6. The laser source according to one or more of the preceding claims, wherein

- the laser (1) emits light between 800 and 1600nm and/or
- any of the reflectors (6a, 6b; 16a, 16b; 26a, 26b; 34) or beam splitters/combiners (31) has a reflectivity maximum within the bandwidth of the laser, and/or
- a bandwidth of its reflectivity between 0.05 and 2nm full-width half-maximum, and/or
- a peak reflectivity between 0.005 and 0.4.

7. The laser source according to one or more of the preceding claims, wherein

- the optical field established in the first cavity (5a, 15a, 25a) is out of phase with the optical field of the laser (1), and
- the optical field established in the second cavity (5b, 15b, 25b, 33) is out of phase with the optical field established in said first cavity,
- thus inhibiting phase matching with the laser and hence coherent operation of said laser source.

8. The laser source according to one or more of the preceding claims, wherein

- the laser is a semiconductor diode laser, especially an InGaAs quantum well diode laser, and/or
- the laser guide means comprises an optical fiber, either a polarization-maintaining or non-polarization maintaining optical fiber, and/or
- the reflectors are fiber Bragg gratings within said fiber.

9. The laser source according to one or more of the preceding claims, further comprising

- means for directing the laser beam into the optical fiber, in particular beam collimating or focusing means (4, 14) attached to or integrated into said optical fiber (5).

10. A method of making a laser source that generates a stable laser beam of a given bandwidth, said laser source having a laser (1) and laser beam guide means (5) in front of said laser, characterized by

- simultaneously manufacturing, preferably within said laser beam guide means (5), a plurality of reflectors (6a, 6b), which form, together with the laser front facet (2), the desired external cavities (5a, 5b) in front of said laser (1).

11. The method of making a laser source according to claim 10, whereby

- the simultaneous manufacturing is carried out by UV exposure methods creating the reflectors (6a, 6b) as fiber Bragg gratings in the optical fiber constituting the laser beam guide means (5).